What is claimed is:

1. A method for manufacturing a semiconductor substrate, comprising:

forming an epitaxial layer on a semiconductor substrate by epitaxial growth; and

forming an insulating layer by deposition at an interface between the epitaxial layer and the semiconductor substrate by performing a heat treatment that is performed in an oxidizing atmosphere.

2. The method according to claim 1, wherein:

the semiconductor substrate contains oxygen at a high concentration; and

the insulating layer is formed by deposition of an oxide.

3. The method according to claim 2, wherein the concentration of oxygen in the semiconductor substrate is more than about 1×10^{18} atoms/cm^3.

4. The method according to claim 1, wherein the heat treatment for forming the insulating layer is performed at a temperature higher than about 1100℃.

5. The method according to claim 1, wherein:

the semiconductor substrate is composed of one of a substrate containing oxygen at a high concentration and a

semi-insulating substrate having a high resistance; and

a crystallinity improving heat treatment is performed to the semiconductor substrate in a hydrogen atmosphere to improve crystallinity on a surface of the semiconductor substrate before the epitaxial layer is formed on the surface of the semiconductor substrate.

6. A method for manufacturing a semiconductor substrate, comprising:

preparing one of a semi-insulating semiconductor substrate having a high resistance and a semiconductor substrate including oxygen at a high concentration; and

epitaxially growing a semiconductor layer on the semiconductor substrate to form an apparent SOI structure.

7. The method according to claim 6, wherein a minority carrier lifetime in the semiconductor substrate is less than about 1×10^{-8} sec.

8. The method according to claim 7, wherein a carrier concentration of the semiconductor substrate is less than about 1×10^{14} cm^{-3}.

9. The method according to claim 6, wherein the semiconductor substrate contains an impurity that forms a deep trap level in a band gap.

10. The method according to claim 6, wherein the semiconductor layer has a conductivity type reverse to a conductivity type of the semiconductor substrate.

11. The method according to claim 6, further comprising performing a heat treatment to the semiconductor substrate in a hydrogen atmosphere to improve crystallinity on a surface of the semiconductor substrate before the semiconductor layer is epitaxially grown on the surface of the semiconductor substrate.

12. The method according to claim 6, wherein:

the semiconductor layer epitaxially grown on the semiconductor substrate includes a first epitaxial layer of a first conductivity type formed on the semiconductor substrate, and a second epitaxial layer of a second conductivity type formed on the first epitaxial layer.

13. The method according to claim 12, further comprising performing a heat treatment to the semiconductor substrate in a hydrogen atmosphere to improve crystallinity on a surface of the semiconductor substrate, before the semiconductor layer is epitaxially grown on the semiconductor substrate.

14. A method for manufacturing a semiconductor substrate, comprising:

preparing a semiconductor substrate of a first conductivity type having a minority carrier lifetime less than about 1×10^{-8} sec; and

epitaxially growing a semiconductor layer of a second conductivity type on the semiconductor substrate.

15. A method for manufacturing a semiconductor substrate, comprising:

preparing a base wafer and a bonding wafer each having a mirror-finished principal surface, one of the base wafer and the bonding wafer being composed of a semiconductor substrate containing oxygen at a high concentration or a semi-insulating semiconductor substrate having a high resistance;

forming an oxide film on the mirror-finished principal surface of one of the base wafer and the bonding wafer;

bonding the base wafer and the bonding wafer with the respective mirror-finished principal surfaces facing each other with the oxide film interposed therebetween; and

grinding and polishing a back surface of the bonding wafer at an opposite side of the base wafer to form an SOI layer on the base wafer through the oxide film.

16. The method according to claim 15, wherein:

when the bonding wafer is composed of the semiconductor wafer containing oxygen at the high concentration or the semi-insulating semiconductor substrate,

after grinding and polishing the bonding wafer to form the SOI layer, a heat treatment is performed to the SOI layer on the base wafer in a hydrogen atmosphere to outwardly diffuse oxygen on a surface of the SOI layer and to form a gettering site at a bonding interface.

17. A method for manufacturing an SOI substrate, comprising:

ion-implanting an element into a high resistance semiconductor substrate to form a deposition nuclear layer by the element, the deposition nuclear layer having a plurality of nuclei for deposition and extending at a depth from a surface of the semiconductor substrate, the semiconductor substrate containing oxygen at a high concentration; and

performing a heat treatment to the semiconductor substrate to form an oxide layer in the semiconductor substrate by making the oxygen, contained in the semiconductor substrate, deposit using the plurality of nuclei in the deposition nuclear layer.

18. The method according to claim 17, wherein the element is one selected from a group consisting of oxygen, nitrogen, silicon, carbon, and fluorine.

19. The method according to claim 17, wherein the heat treatment is performed at a temperature higher than about

1000 ℃ in an atmosphere containing at least one of oxygen and nitrogen mainly.

20. The method according to claim 17, further comprising forming a semiconductor layer on the surface of the semiconductor substrate by epitaxial growth, after the oxide layer is formed in the semiconductor substrate.

21. A semiconductor substrate comprising:

a substrate containing oxygen at a high concentration;

a semiconductor layer epitaxially grown on the substrate; and

an oxide layer deposited at an interface between the substrate and the semiconductor layer.

22. A semiconductor substrate comprising:

a semi-insulating substrate having a high resistance; and

a semiconductor layer epitaxially grown on the semi-insulating substrate.

23. The semiconductor substrate according to claim 22, wherein the semi-insulating substrate has a minority carrier lifetime less than about 1×10^{-8} sec.

24. The semiconductor substrate according to claim 22, wherein the semi-insulating substrate contains an impurity

that forms a deep trap level in a band gap.

25. The semiconductor substrate according to claim 22, wherein the semi-insulating substrate has a conductivity type reverse to a conductivity type of the semiconductor layer.

26. A semiconductor substrate comprising:

a first wafer composed of one of a substrate containing oxygen at a high concentration and a semi-insulating substrate having a high resistance;

a second wafer bonded to the first wafer; and

an oxide film interposed between the first wafer and the second wafer.

27. The semiconductor substrate according to claim 26, wherein a gettering site is formed in the first wafer at a side of the oxide film.

28. The semiconductor substrate according to claim 27, wherein the first wafer forms an SOI layer disposed on the second wafer through the oxide film.

29. The semiconductor substrate according to claim 26, wherein the second wafer forms an SOI layer disposed on the first wafer through the oxide film.